

Showing of Compliance with Section 25.222 and Supporting Exhibits

University of California San Diego Scripps Institution of oceanography

Application to supply ESV service in the Gulf of Mexico, US Waterways, Atlantic Ocean and Pacific Ocean

By this application, Applicant University of California San Diego Scripps institution of Oceanography seeks authority to operate an ESV network utilizing Seatel antennas models 4006, 4996, and 6006 via a fixed hub station located in La Jolla, California. These remote ESV antennas will be located on vessels traveling in U.S. and international waters. They will operate with a 3.8 meter Prodelin Hub antenna located in La Jolla, CA. that UCSD Scripps Institution of Oceanography will also seek to be licensed by the Commission.

The University of California San Diego, Scripps Institution of Oceanography seeks authorization for the ESV remote stations to communicate via Satmex 5 satellite located at 116.8 West Longitude and ALSAT satellites on the Permitted Space Station List to provide ESV service.

All of the Seatel ESV antennas, the 4006, the 4996, and the 6006, will be in full compliance with the requirements set forth in the commissions ESV Order, 20 FCC Rcd 674 (2005), and in part 25 of the Rules.

University of California San Diego, Scripps institution of Oceanography's showing of compliance with Part 25 of the Commission's Rules and the exhibits required by Section 25.222 follow herewith.

University of California San Diego
Scripps Institution of oceanography

Application to supply ESV service in the Gulf of Mexico, US Waterways, Atlantic Ocean and Pacific Ocean.

Showing of Compliance with Part 25 of the Commission's Rules

Section 25.222

- (a) (1) EIRP Spectral Density** Comply.
For 6006 Antennas, see Seatel and CommSystems declarations and Figure 1, page 7.
For 4996 Antennas, see Seatel and CommSystems declarations and Figure 5, page 10.
For 4006 Antennas, see Seatel and CommSystems declarations and Figure 9, page 14
- (a) (2) EIRP Spectral Density** Comply.
For 6006 Antennas, see Seatel and CommSystems declarations and Figure 2, page 8.
For 4996 Antennas, see Seatel and CommSystems declarations and Figure 6, page 12.
For 4006 Antennas, see Seatel and CommSystems declarations and Figure 10, page 16
- (a) (3) EIRP Spectral Density** Comply.
For 6006 Antennas, see Seatel and CommSystems declarations and Figure 1, page 7.
For 4996 Antennas, see Seatel and CommSystems declarations and Figure 5, page 10.
For 4006 Antennas, see Seatel and CommSystems declarations and Figure 9, page 14
- (a) (4) EIRP Spectral Density** Comply.
For 6006 Antennas, see Seatel and CommSystems declarations and Figures 3 & 4, pages 9 & 10.
For 4996 Antennas, see Seatel and CommSystems declarations and Figures 7 & 8, pages 13 & 14.
For 4006 Antennas, see Seatel and CommSystems declarations and Figures 11 & 12, pages 17 & 18.
- (a) (5) Cross-Pole Alignment** Comply.
All of the Seatel ESV antennas provide automatic polarization adjustments. In addition, the Cross Pole isolation of each antenna is measured during the commissioning procedures with the assistance of the satellite operator's test center to verify proper alignment
- (a) (6) Antenna Pointing Error** Comply.
See Seatel Declaration

(a) (7) Automatic TX Shutoff Comply.
See Seatel Declaration

(a) (8) U.S Contact Information Comply
The University of California San Diego, Scripps Institution of Oceanography network support staff will have the authority and ability to cease all emissions from the ESV stations through the facilities at the Hub location in La Jolla, California. This point of contact is available 24 hours a day, seven days a week by calling 1-858-534-5090

(a) (9) Radiation Guidelines Comply.
All of the Seatel ESV antennas provide field programmable blockage to prevent radiation toward occupied areas if required. Further, Radiation Hazard Warning signs are used to alert persons nearby of the potential hazard.

(a) (10) Geographic Area of operations Comply.
See Figure 13, page 19.

(b) EIRP Density Charts Comply.
See Seatel and CommSystems declarations and Figure 1, Figure 2, Figure 3, and Figure 4.

(c) (1) Vessel Tracking Record Comply.
These records will be collected and maintained as specified. Requests to make this data available may be directed to the University of California San Diego, Scripps Institution of Oceanography network support staff by calling 1-858-534-5090.

(c) (2) Communication with Vessels of Foreign Registry Comply

(c) (3) ESV Operational Control by U.S. Hub Station Comply

(d) Frequency Coordination Comply.
The ESV network stations will not operate in the 14.0 – 14.2 GHz band in the specified locations

(e) Frequency Coordination Comply.
The ESV network stations will not operate in the 14.0 – 14.2 GHz band in the specified locations

(f) Acceptance of Interference Comply.
The ESV network stations will not claim protection from interference from any authorized terrestrial stations to which frequencies are already assigned, or may be assigned in the future.

ESV Order 102 ESV Power Limits Toward Horizon Comply.

The ESV network stations shall not transmit toward the horizon with an EIRP greater than 16.3 dBW, and an EIRP Density toward the horizon of greater than 12.5 dBW/MHz

ESV Order 102 Minimum Elevation Angle Comply

The ESV network stations will not operate at elevation angles less than 5 degrees

ESV Order 105 ALSAT Authority

In addition to Satmex 5 (116.8° W), UCSD, Scripps institution of Oceanography respectfully requests that ALSAT authority be granted with this application.



Cobham SATCOM
Marine Systems
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F: +1 (925) 288-1420

Declaration of Sea Tel, Inc.

1. Sea Tel designs, develops, manufactures and services marine stabilized antenna systems for satellite communications at sea. UCSD Scripps Institution of Oceanography proposes to use three of Sea Tel's antenna systems; the Model 4996, the Model 4006, and the Model 6006 as part of its Ku-band Earth Station on Vessels ("ESV") network.
2. The Sea Tel Model 4996 antenna, referenced in paragraph 1, will meet the off-axis EIRP spectral density envelope set forth in FCC 47 C.F.R. § 25.222(a)(1)-(4) when the input power to these antenna systems is limited to -19.4 dBW/4kHz.
3. The Sea Tel Model 4006 antenna, referenced in paragraph 1, will meet the off-axis EIRP spectral density envelope set forth in FCC 47 C.F.R. § 25.222(a)(1)-(4) when the input power to these antenna systems is limited to -17.9 dBW/4kHz.
4. The Sea Tel Model 6006 antenna, referenced in paragraph 1, will meet the off-axis EIRP spectral density envelope set forth in FCC 47 C.F.R. § 25.222(a)(1)-(4) when the input power to the antenna system is limited to -14.0 dBW/4kHz.
5. The Sea Tel antennas referenced in paragraph 1 will maintain a stabilization pointing accuracy of better than 0.2 degrees under specified ship motion conditions. FCC compliant supervisory software has been developed to continuously monitor the pedestal pointing error and will trip an error flag whenever an unexpected event occurs that causes the instantaneous pointing error to exceed 0.5 degrees. This flag will not clear until the pedestal error decreases to 0.2 degrees or less. The state of this flag is used as an additional logic input to the existing "Transmit Mute" function of the Sea Tel below decks controller. By connecting the "Transmit Mute Output" of the Sea Tel below decks controller to the "Mute Input" of the satellite modem, the provisions of FCC 47 C.F.R. § 25.222(a)(7) are satisfied.
6. Sea Tel maintains all relevant test data, which is available upon request, to verify these declarations.

Executed on:

11/11/09

By:


John Phillips
Vice President, Engineering
Sea Tel, Inc.

Declaration of CommSystems

1. CommSystems, LLC is a Satellite Communications Engineering & Integration company located in San Diego, California. CommSystems has a contract with the University of California San Diego, Scripps Institution of Oceanography to provide Engineering and Technical Services. In that capacity, under the supervision and direction of the University of California San Diego, Scripps Institution of Oceanography Network Manager, CommSystems will be responsible for the technical operations of the ESV stations through the network Hub station located in La Jolla, CA.
2. CommSystems technical staff has read the attached Declaration of Seatel, Inc. dated November 11, 2009, and has worked closely with Seatel to ensure that the University of California San Diego, Scripps Institution of Oceanography ESV network will be in compliance with the FCC's ESV Rules.
3. The Seatel ESV Ku-Band antennas that will operate through the La Jolla Hub antenna are the models 4006, model 4996, and model 6006. CommSystems and UCSD Scripps Institution of Oceanography are aware that in order to meet the off-axis EIRP spectral density limits defined in section 25.222(a)(1)-(4) of the FCC's ESV Rules, the input power to the antenna system must be limited to -17.9dBW/4kHz for the 4006 antenna, -19.4 dBW/4kHz for the 4996 antenna, and -14dBW/4kHz for the 6006 antenna.
4. CommSystems and the UCSD, Scripps Institution of Oceanography will take all necessary steps to ensure that the input power to the Seatel antennas is limited in the manner described above. CommSystems and the UCSD, Scripps Institution of Oceanography will ensure that the specified power spectral densities are not exceeded by using the appropriate coding. For this Ku-Band ESV network, QPSK rate $\frac{3}{4}$ will typically meet the requirement. The University of California San Diego, Scripps Institution of Oceanography will also monitor absolute power levels both by working with the satellite operators and directly through the La Jolla Hub earth station.

I, Karl Kapusta declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Executed on December 5, 2009


Karl Kapusta
Vice President
CommSystems, LLC

Seatel 6006 Antenna

Sea Tel, Inc.

1.5 Meter EIRP Spectral Density @ -14 dBW / 4kHz input and 0.75 dB radome loss

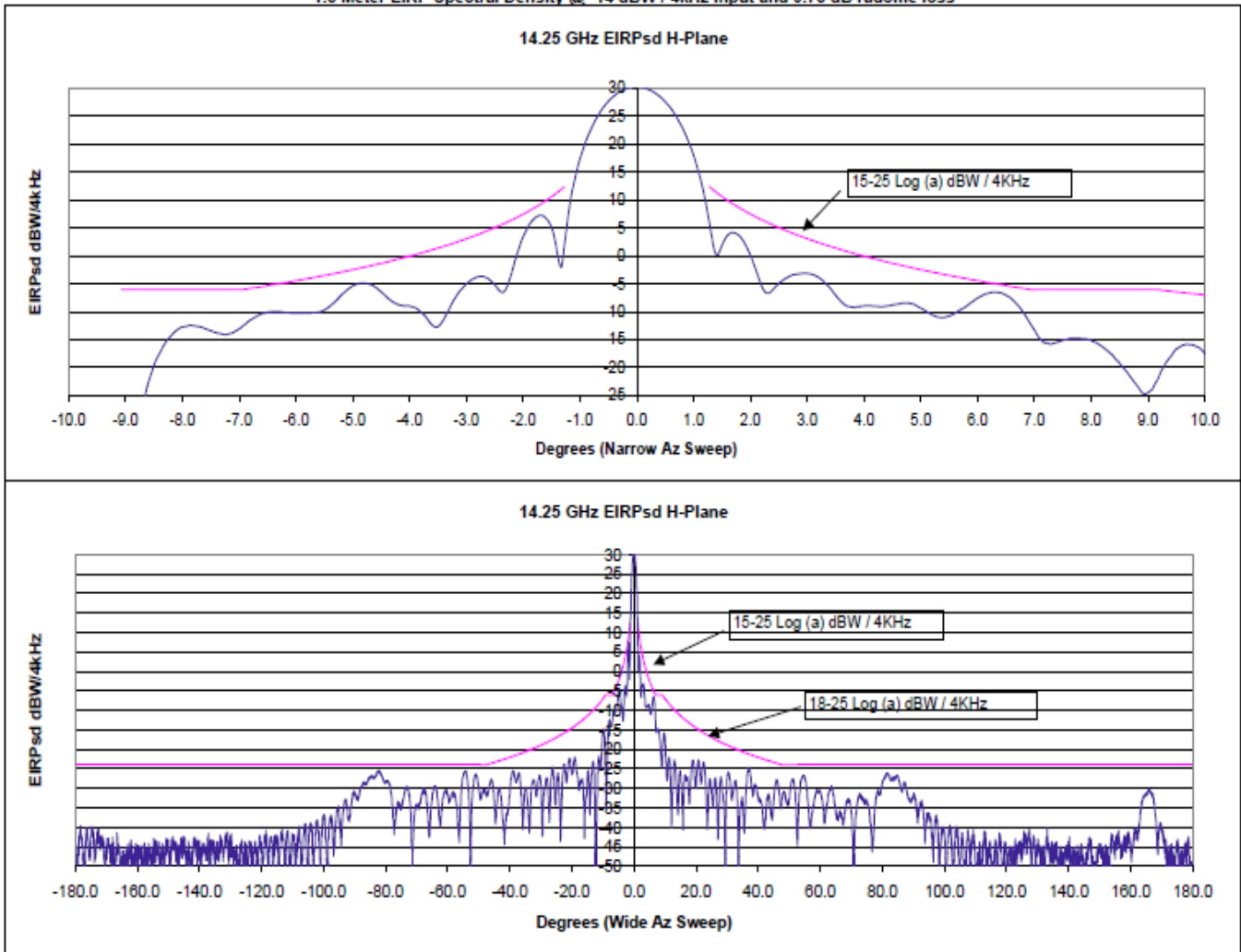


Figure 1

Seatel 6006 Antenna

Sea Tel, Inc.

1.5 Meter EIRP Spectral Density @ -14 dBW / 4kHz input and 0.75 dB radome loss

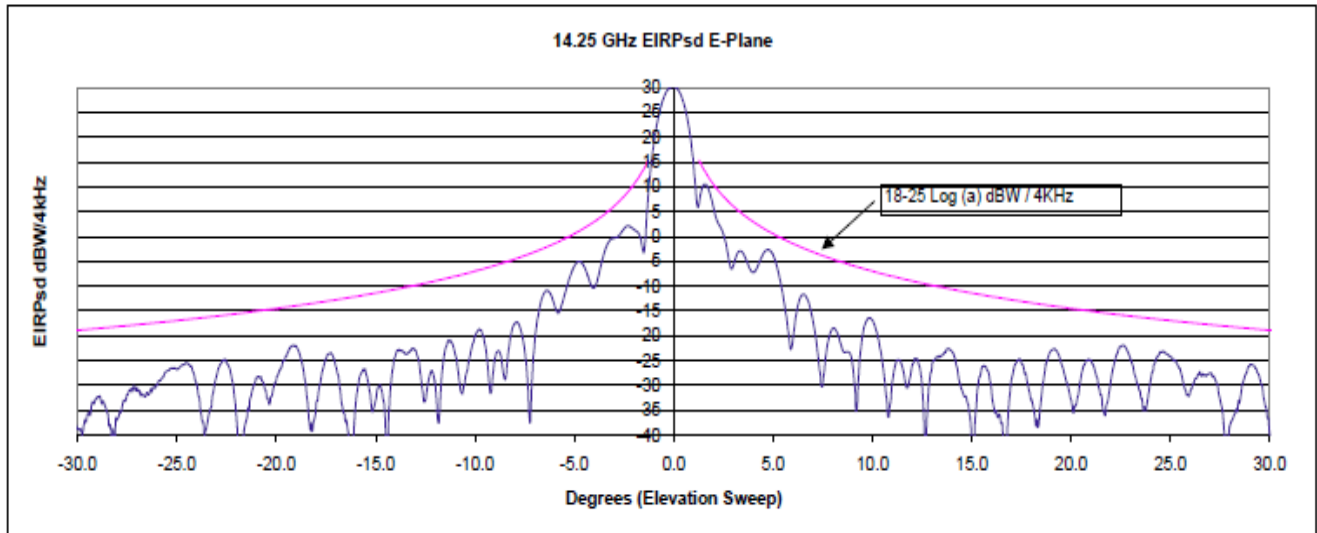


Figure 2

Seatel 6006 Antenna

Sea Tel, Inc.

1.5 Meter EIRP Spectral Density @ -14 dBW / 4kHz input and 0.75 dB radome loss

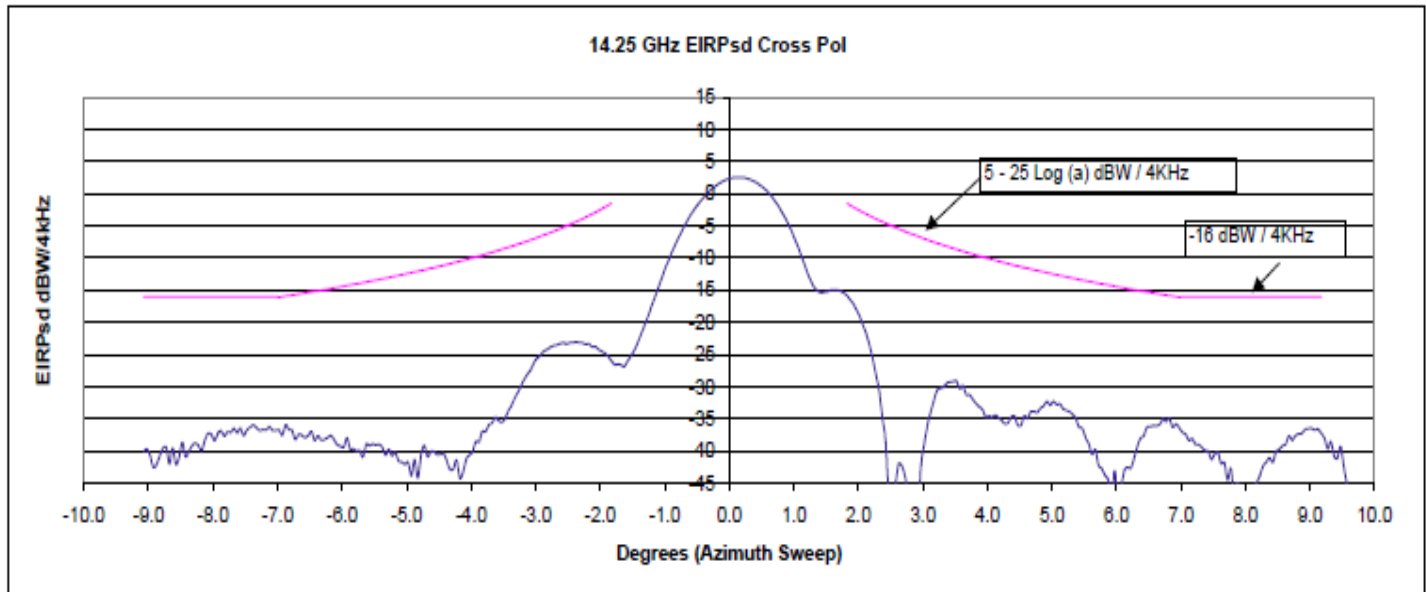


Figure 3

Seatel 6006 Antenna

Sea Tel, Inc.

1.5 Meter EIRP Spectral Density @ -14 dBW / 4kHz input and 0.75 dB radome loss

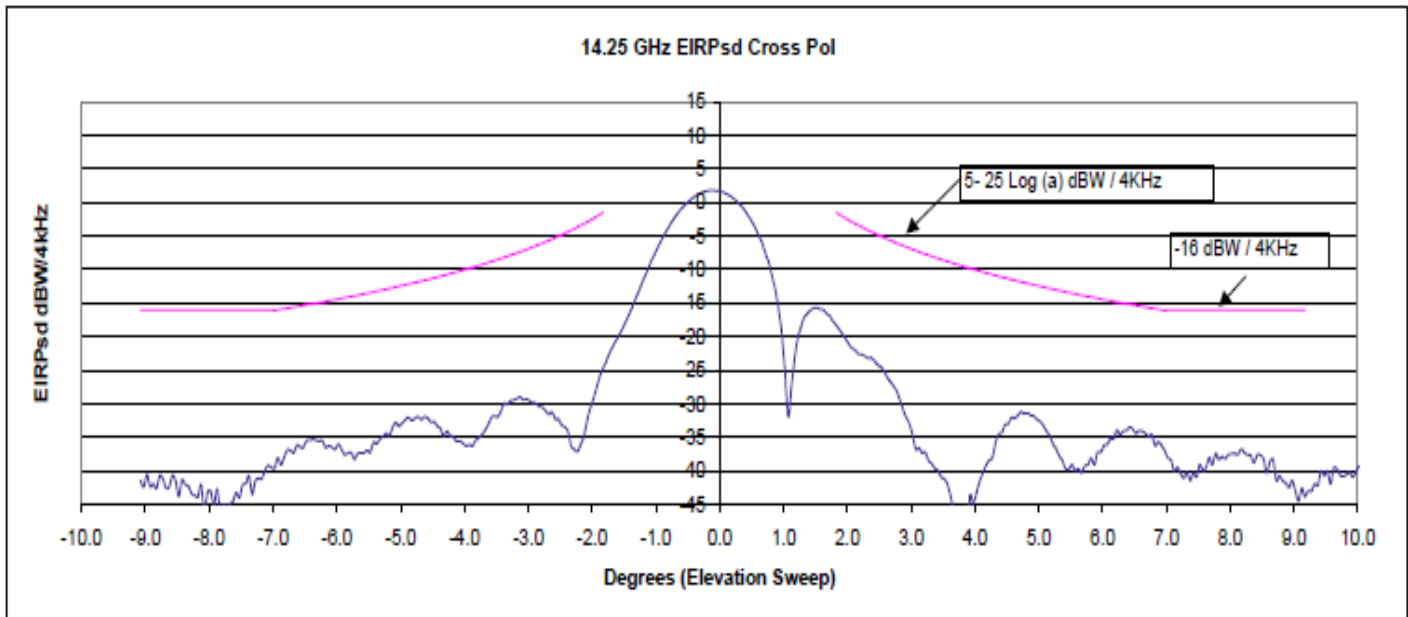


Figure 4

Seatel 4996 Antenna

Sea Tel, Inc.

1.2 Meter, EIRP Spectral Density @ -19.4 dBW / 4kHz input and 0.75 dB radome loss

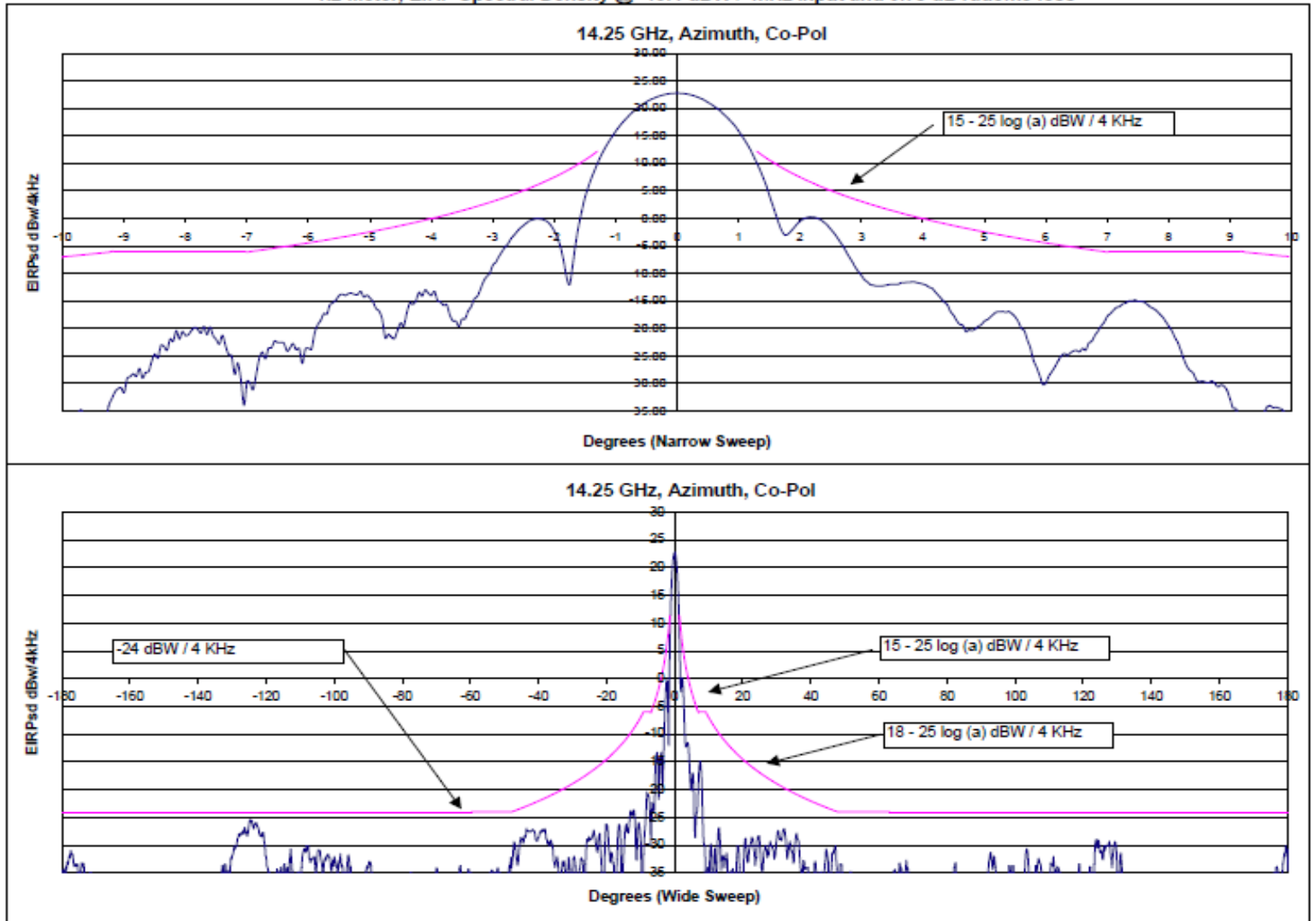


Figure 5

Seatel 4996 Antenna

Sea Tel, Inc.
1.2 Meter, EIRP Spectral Density @ -19.4 dBW / 4kHz input and 0.75 dB radome loss

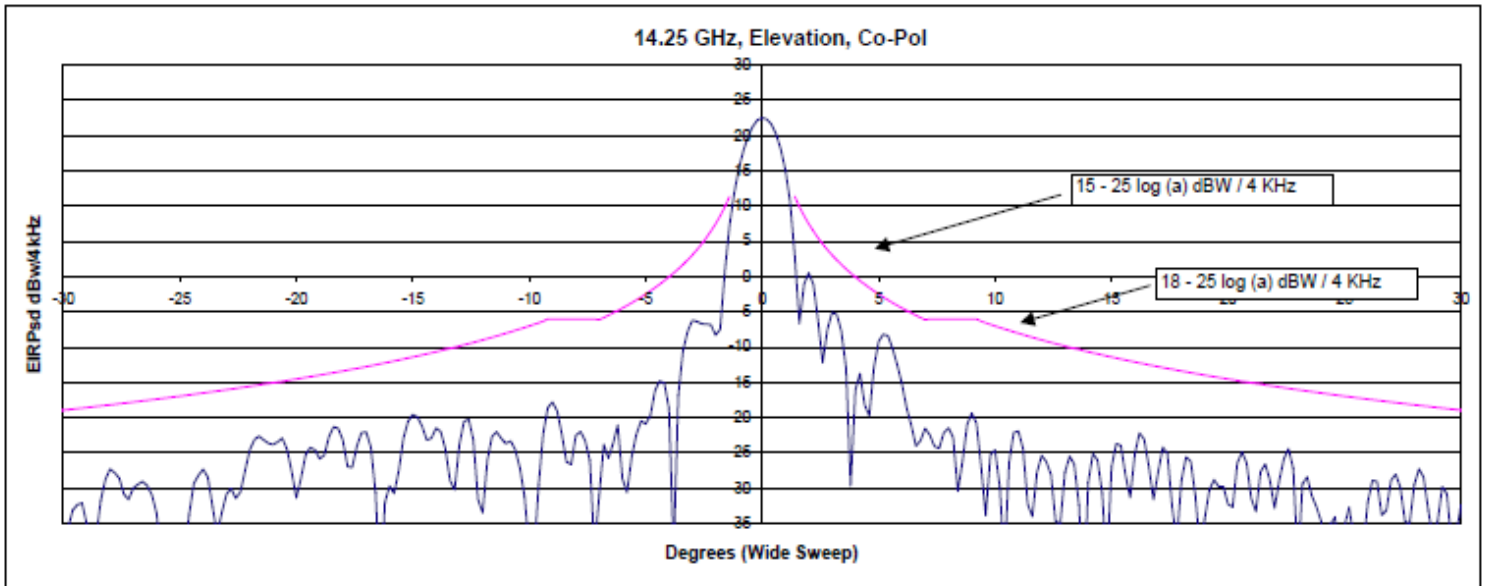


Figure 6

Seatel 4996 Antenna

Sea Tel, Inc.
1.2 Meter, EIRP Spectral Density @ -19.4 dBW / 4kHz input and 0.75 dB radome loss

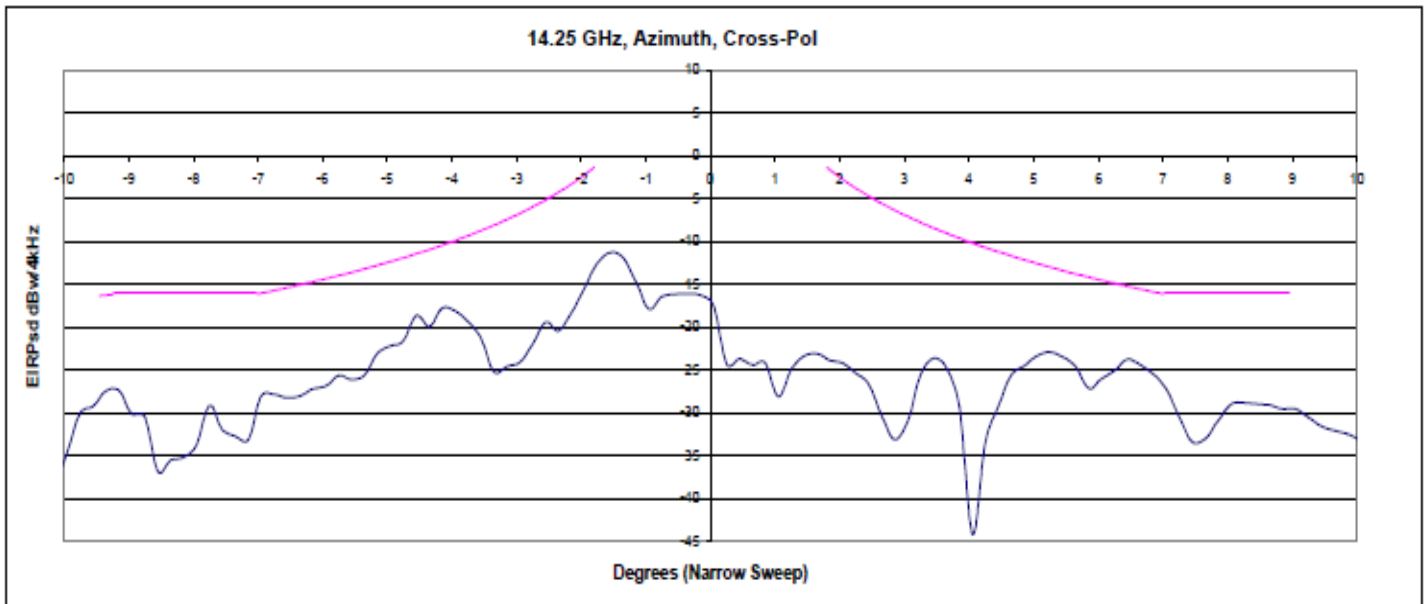


Figure 7

Seatel 4996 Antenna

Sea Tel, Inc.

1.2 Meter, EIRP Spectral Density @ -19.4 dBW / 4kHz input and 0.75 dB radome loss

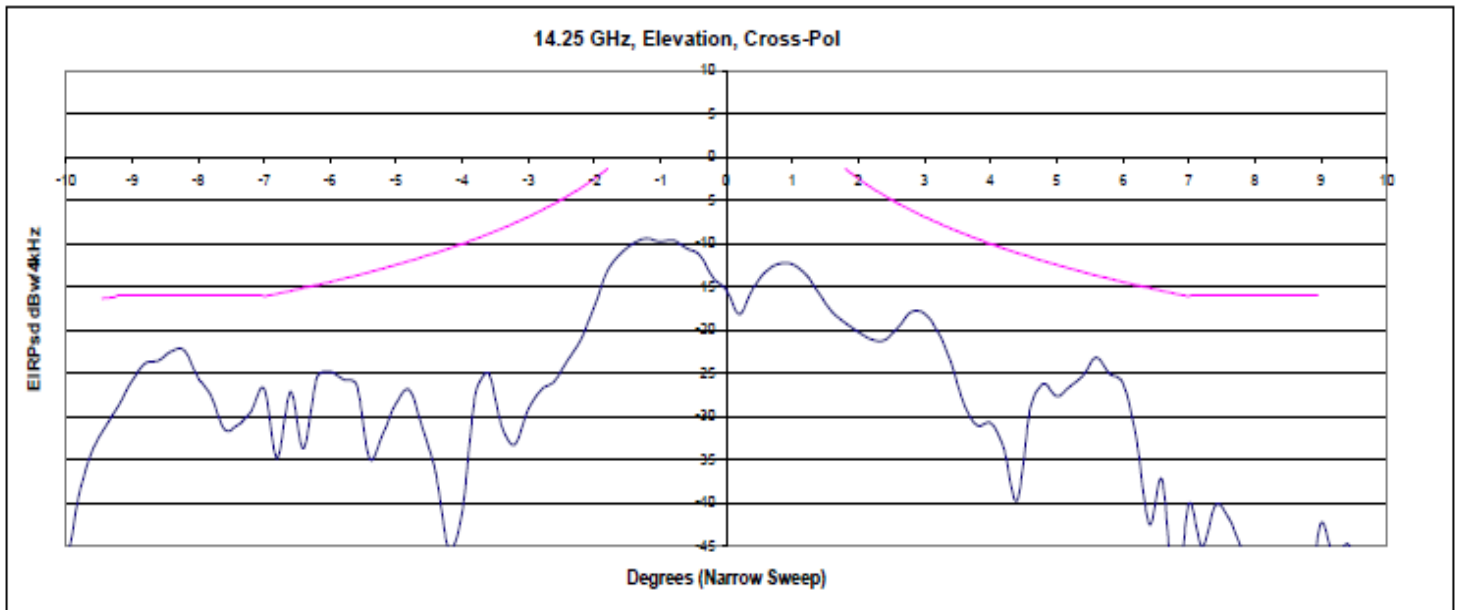


Figure 8

Seatel 4006 Antenna

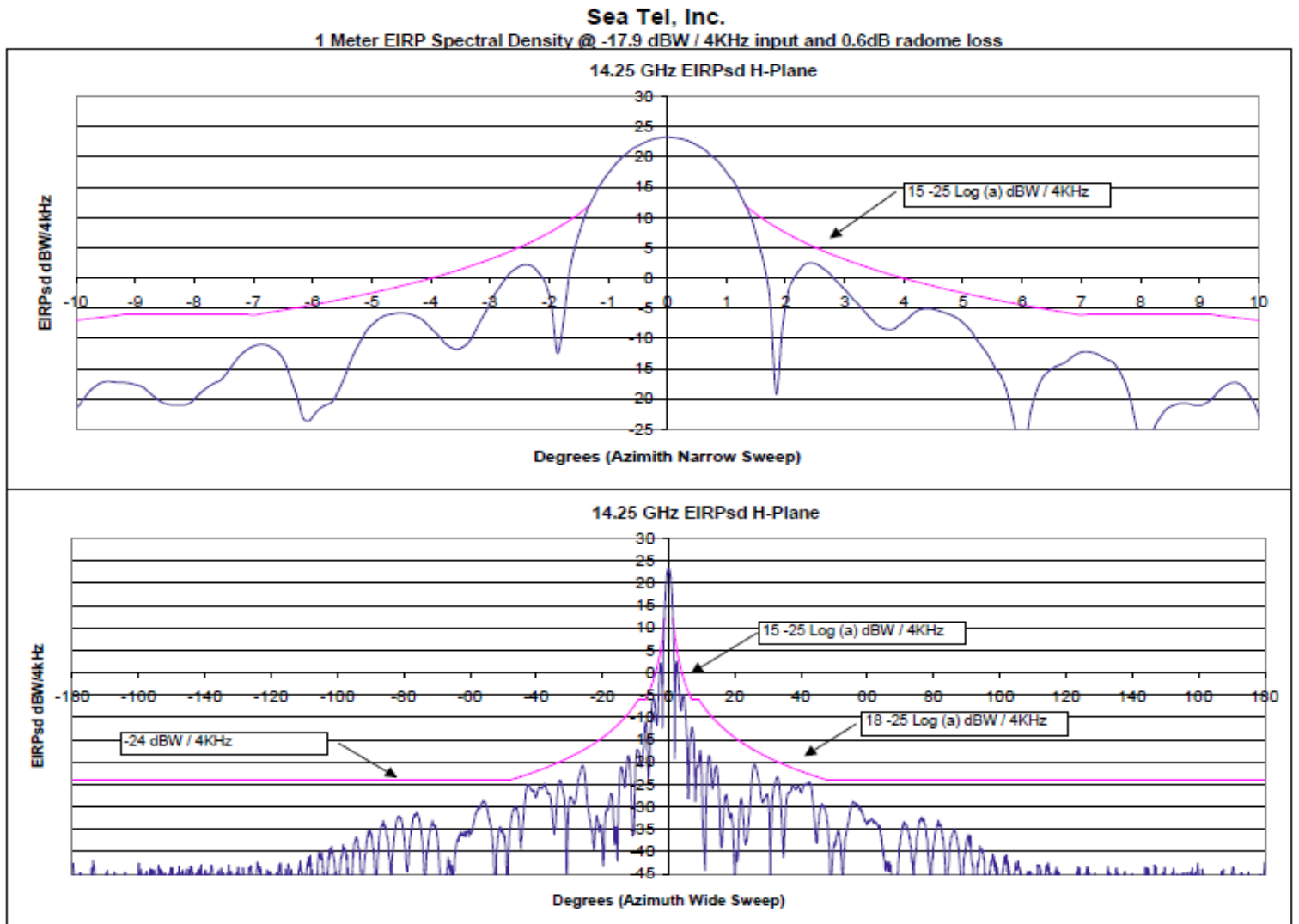


Figure 9

Seatel 4006 Antenna

Sea Tel, Inc.

1 Meter EIRP Spectral Density @ -17.9 dBW / 4kHz input and 0.6 dB radome loss

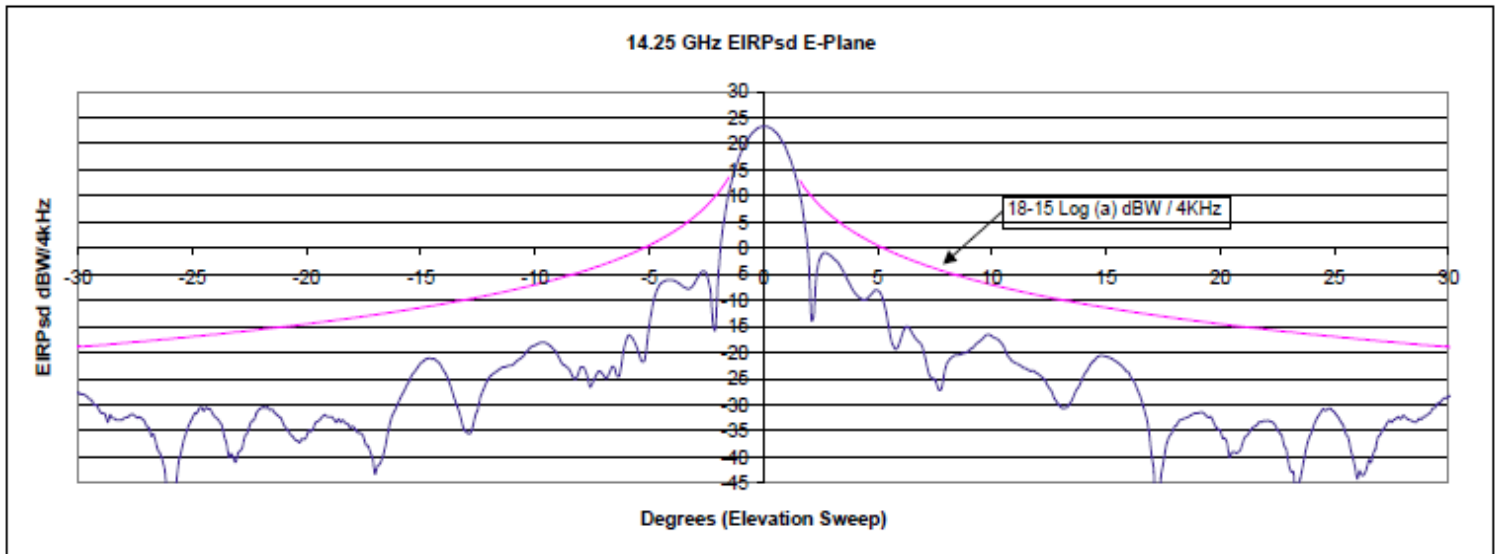


Figure 10

Seatel 4006 Antenna

Sea Tel, Inc.

1 Meter EIRP Spectral Density @ -17.9 dBW / 4KHz input and 0.6dB radome loss

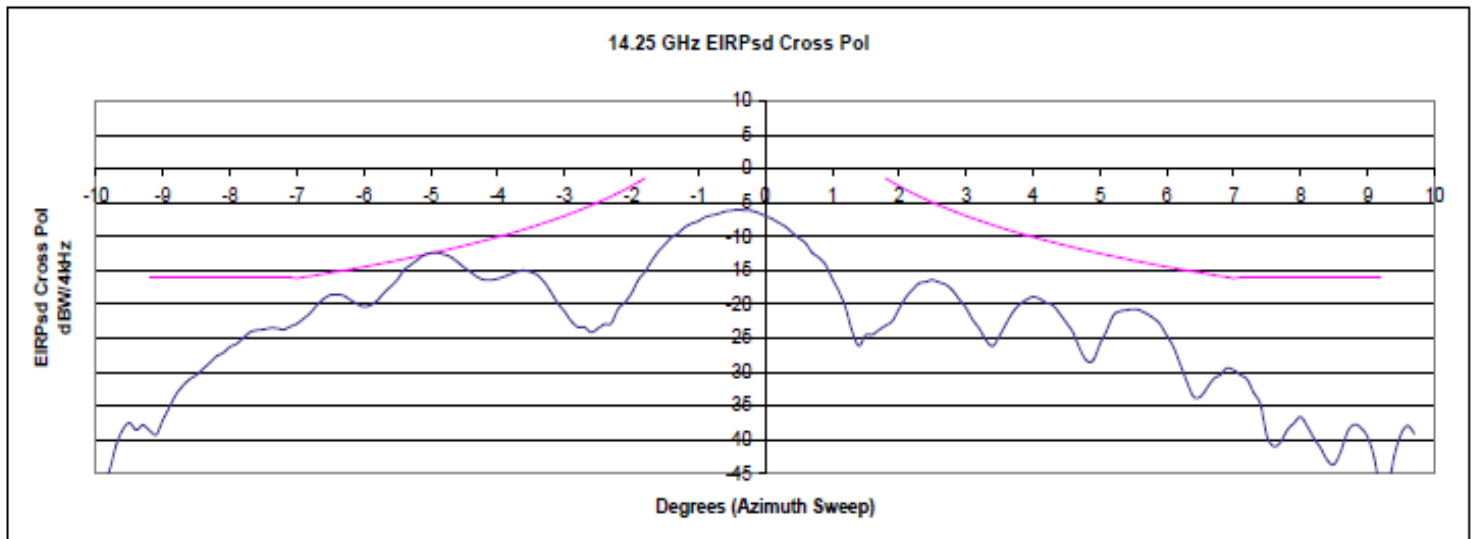


Figure 11

Seatel 4006 Antenna

Sea Tel, Inc.

1 Meter EIRP Spectral Density @ -17.9 dBW / 4KHz input and 0.6dB radome loss

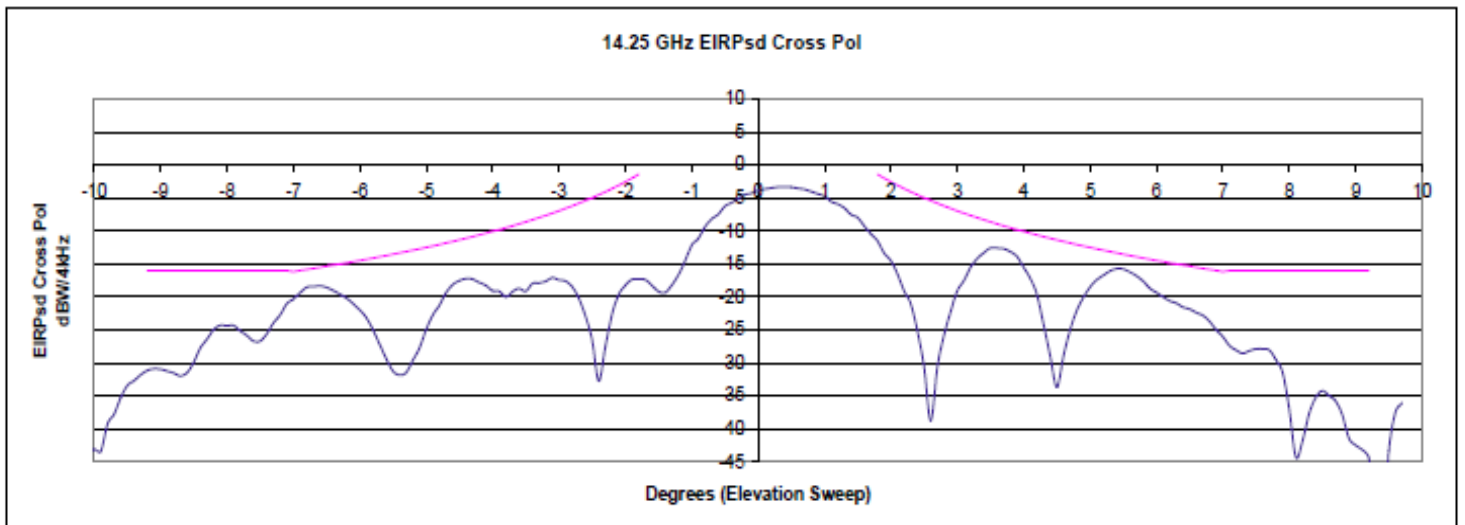


Figure 12



Figure 13

Pacific Ocean, Gulf of Mexico, U.S Waterways, Atlantic ocean